

Serial Nr.: 10/699,547
Art Unit: 3721

03220-URS

AMENDMENTS TO THE SPECIFICATION:

Page 1, amend paragraph [0001] as:

[0001] The present invention relates to a structure of shockproof spindle, and more particularly to a structure that has a C-shaped washer, which has an opening to enable a new change the assembly process of the structure of spindle. Because of the new assembly process, a sleeve of the structure can be modified is able to modify its dimension to prevent falling of a ball guided in the structure under impact-effect. In addition to all of the above, the thickness of the washer can be increased increases also, and that can improve the impact absorbing efficiency of the structure.

Page 1, amend paragraph [0002] as:

[0002] A conventional structure of shockproof spindle is installed in an electric tool, such as an electric drill, for drilling cement wall, and has impact absorbing working function. The structure absorbs the impact when a tool installed on the end of the spindle is shocked against the workpiece during operation-process the operation of the tool. Since the structure works smoothly, the damage or destruction of assembly precision, made by the impact, of the parts in the electric tool is avoided, and the structure is more compact and the operation period is improved increased.

Page 1, amend paragraph [0003] as:

[0003] Referring to Figure 1, in a conventional structure of shockproof spindle, a spindle 1 ~~inserts~~ is inserted through a washer 2, an elastomer 3, and a sleeve 4 sequentially. The sleeve 4 caps the elastomer 3 while the elastomer 3 presses on the top

Serial Nr.: 10/699,547
Art Unit: 3721

03220-URS

of a base 11 fixed ~~[[under]]~~ at the bottom end of the spindle 1. Next, a ball 5 is positioned in a chute 41 defined in the sleeve 4, ~~and pushes down while~~ the sleeve 4 ~~is pushed down~~ to compress the elastomer 3 until the ball 5 can be retained in ~~contacts~~ a chute 12 of the spindle 1 tightly.

Page 2, amend paragraph [0004] as:

[0004] In addition to all of the above, the elastomer 3 held between the base 11 and the sleeve 4 absorbs impact energy when a tool installed on the end of the spindle 1 is shocked against the workpiece during ~~operation process~~ the operation of the tool. Since the spindle 1 works smoothly owing to the effect of the elastomer 3, the operators work more easily, and the damage or destruction of assembly precision, made by the impact, of the parts in the electric tool is avoided.

Page 2, amend paragraph [0005] as:

[0005] Furthermore, because the ball 5 of the conventional structure of shockproof spindle ~~must install~~ can only be installed in the chute 41 of the sleeve 4 after all the other part assembly is finished, ~~[[and]]~~ the elastomer 3 has to be short enough for ~~is shorter or~~ the chute 41 of the sleeve 4 ~~[[is]]~~ to be lower than the chute 12 for the installation of the ball 5. However, ~~[[the]]~~ such a design of the elastomer 3 or the chute 41 of the sleeve 4 leads to the problems that the chute 41 is lower than the chute 12 of the spindle 1 under impact, and the ball 5 ~~[[drops]]~~ may fall out from the chute 12. These problems not only cause the spindle to lose function of impact absorbing but also destroy the transmission mechanism.

Serial Nr.: 10/699,547
Art Unit: 3721

03220-URS

Page 2, amend paragraph [0007] as:

[0007] In order to overcome the aforementioned problems of the conventional arts, the present invention presents an innovative [[a]] structure of shockproof spindle and the method of assembling it is designed meticulously. On the basis of inventor's practice according to the work, the present invention is useful, and it can solve the problems and limits of the conventional arts

Pages 2-3, amend paragraph [0008] as:

[0008] To achieve ~~attain~~ the above-stated object, [[in]] a structure of shockproof spindle of the present invention comprises having a spindle inserted through an elastomer, which is a compressible structure, and a sleeve, which is a hollow and circular cylinder, sequentially. The sleeve caps the elastomer while the elastomer is pressed ~~presses~~ on the top of the base fixed [[under]] at the bottom end of the spindle to expose the chute of the spindle. The ball is then disposed in keeps-contact the chute of the spindle and the chute of the sleeve. After the sleeve is released from pressing the elastomer, the sleeve, the elastomer and the spindle are held together by the ball which is retained between the chutes of the spindle and the sleeve. A C-shaped plate is inserted between the elastomer and the base afterwards. ~~In addition to all of the above~~ With the above structure, the elastomer held between the base and the sleeve absorbs the impact when a tool installed on the end of the spindle is shocked against the workpiece during ~~operation-process~~ the operation of the tool.

Page 3, amend paragraph [0009] as:

Serial Nr.: 10/699,547
Art Unit: 3721

03220-URS

[0009] The present invention has the following improvements. First, the assembly process of the present invention is improved because the washer is a C-shaped plate with and has an opening and can be installed after the spindle, the elastomer and the sleeve are assembled and held together. As a result, the elastomer can be longer or have a stronger elastic force because there is no washer between the elastomer and the base when the elastomer is pressed to expose the chute of the spindle. The thickness of the washer can also be increased ~~increase~~ with this assembly process because the elastomer can be compressed upwards to make a room for the washer. The stronger elastic force of the elastomer, and the greater thickness of the washer which is also an elastic material improve is greater the absorbing efficiency is better of the structure. Moreover, the ball is less likely to fall off the chutes and cause damage to the spindle structure because the additional thickness of the washer makes it more difficult to expose the chute of the spindle even if the elastomer is greatly compressed due to strong shock or impact. the design of the elastomer or the chute of the sleeve is not need to consider the interference between assembly of some parts, and the ball never drops from the chute of spindle. The present invention not only improves the impact absorbing efficiency but also prevents the damage of the transmission mechanism.

Page 3, amend paragraph [0011] as:

[0011] Figure 1 illustrates a perspective view of a conventional spindle structure in the prior art.

Page 4, amend paragraph [0015] as:

Serial Nr.: 10/699,547
Art Unit: 3721

03220-URS

[0015] The spindle 1 is a cylinder which is installed ~~and installs~~ coaxially on a base 11. The cylinder of the spindle 1 ~~[[forms]]~~ is formed with a chute 12 that is caved along the surface of the cylinder. The base 11 is also a cylinder and has an outer diameter which is greater than the diameter of the spindle 1.

Page 4, amend paragraph [0016] as:

[0016] The washer 6 is a C-shaped plate made by elastic material and has a sufficient thickness. The side opening ~~[[size]]~~ of the C-shaped plate, ~~the washer 6, is according to~~ depends on the outer diameter of the spindle 1 and should be large enough for the spindle 1 to pass through the side opening.

Page 4, amend paragraph [0017] as:

[0017] The elastomer 3 is a compressible structure, such as a compressive spring. The elastomer 3 surrounds the spindle 1 and is placed above ~~contacts~~ the upper face of the base 11.

Page 4, amend paragraph [0018] as:

[0018] The sleeve 4 is a hollow cylinder and has an inner surface forming an annular chute 41 that is caved along the inner surface of the upper port of the sleeve 4. The chute 41 holds a portion of the ball 5 inside, and another portion of the ball 5 is retained in ~~keeps contact with~~ the chute 12 of the spindle 1. The inner diameter of the chute 41 is designed according to the outer diameter of the spindle 1, and the lower port of the sleeve 4 can cap the upper port of the elastomer 3.

Pages 4-5, amend paragraph [0019] as:

Serial Nr.: 10/699,547
Art Unit: 3721

03220-URS

[0019] The assembly process of the shockproof spindle of the present invention will be described. Firstly, the spindle 1 ~~is inserted~~ inserts into the elastomer 3 and the sleeve 4 sequentially, and the sleeve 4 caps the elastomer 3 while the elastomer 3 is pressed presses on the top of the base 11 fixed ~~[[under]]~~ at the bottom end of the spindle 1. Next, the ball 5 is positioned in the chute 41 of the ~~sleeve 4, and pushes down the sleeve 4~~ which has been pushed down to compress the elastomer 3 until the ball 5 can contact contacts the chute 12 of the spindle 1 tightly and is retained in the chutes of the sleeve 4 and the spindle 1. ~~Continuously, the~~ The elastomer 3 is then allowed to return to its normal state, and the spindle 1 is inserted inserts into the C-shaped washer 6 through the side opening by positioning the C-shaped washer 6 between the elastomer 3 and the base 11. The washer 6 is thus clipped between the elastomer 3 and the base 11 ~~fixed under the spindle 1~~, and ~~the thickness of the washer 6~~ is thick enough to push the elastomer 3 upward and to raise ~~arise~~ the sleeve 4.

Page 5, amend paragraph [0020] as:

[0020] ~~About the said~~ The structure of the shockproof spindle of the present invention, the position, and the maximum compressing deformation of the elastomer 3, ~~is~~ according are designed to keep the ball 5 ~~to contact~~ retained the chute 12 of the spindle 1 and the chute 41 of the sleeve 4 is never lower than the lowest ~~minimum~~ position of ~~[[he]]~~ the chute 12 of the spindle 1 after the C-shaped washer 6 is inserted between the elastomer 3 and the base 11 of the spindle 1. The elastomer 3 can be longer or have a stronger elastic force compared to the prior arts because there is no washer between the elastomer 3 and the base 11 when the elastomer 3 is pressed to expose the chute 12 of the

Serial Nr.: 10/699,547
Art Unit: 3721

03220-URS

spindle 1 for installing the ball 5. The thickness of the C-shaped washer 6 can also be increased because the elastomer 3 can be compressed upwards to make a room for the washer 6. The stronger elastic force of the elastomer 3 and the greater thickness of the washer 6 which is also an elastic material improve the absorbing efficiency of the structure. Furthermore, the ball 5 is less likely to fall off the chutes to cause damage to the spindle structure because the additional thickness of the C-shaped washer 6 makes it more difficult to expose the chute 12 of the spindle 1 even if the elastomer 3 is greatly compressed due to strong shock or impact.

Page 5, amend paragraph [0021] as:

[0021] ~~In addition to all of the above, the~~ The elastomer 3 held between the base 11 and the sleeve 4 absorbs the impact when a tool installed on the end of the spindle 1 is shocked against the workpiece during operation-process the operation of the tool. Since the spindle 1 works smoothly owing to the effect of the elastomer 3, the operators work more easily, and the damage or destruction of the assembly precision, made by the impact, of the parts in the electric tool is avoided.